

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : Kuon MIYAZAKI et al.  
Group Art Unit : 1796  
Appl. No. : 10/567,355  
(National Stage of PCT/JP2004/011848)  
I.A. Filed : August 18, 2004  
Examiner : Berman  
For : PHOTSENSITIVE COMPOSITION AND CURED PRODUCTS  
THEREOF

**AMENDMENT UNDER 37 C.F.R. 1.116  
IN RESPONSE TO FINAL OFFICE ACTION MAILED JANUARY 9, 2009**

Commissioner for Patents  
U.S. Patent and Trademark Office  
Customer Service Window, **Mail Stop Amendment**  
Randolph Building  
401 Dulany Street  
Alexandria VA 22314

Sir:

This is in response to the Final Office Action from the U.S. Patent and Trademark Office having a date of January 9, 2009, which sets a three month shortened statutory period for response until April 9, 2009.

This response is being filed by the three month shortened statutory period for response whereby an extension of time and the government fee associated therewith should not be necessary for maintaining the pendency of the application. However, if any extension of time and/or any fees are required to maintain the pendency of this application, including any extension of time fee and any claim fee, this is an express request for any required extension of time, including any extension of time for entry of an Examiner's Amendment, and authorization to charge any necessary fee to Deposit Account No. 19-0089.

**Amendments to the Claims** are reflected in the listing of claims which begins on page 3 of this paper.

**Remarks/Arguments** begin on page 9 of this paper.

Reconsideration and allowance of the application in view of the following remarks are respectfully requested.

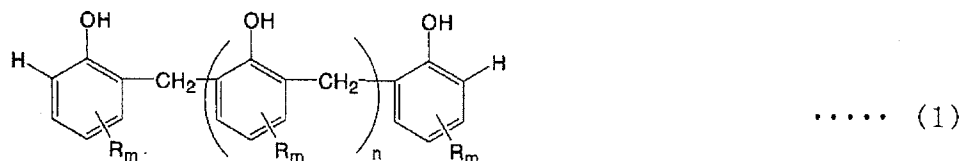
## AMENDMENTS TO THE CLAIMS

The claims in this listing will replace all prior versions, and listings, of claims in the application.

### Listing of Claims:

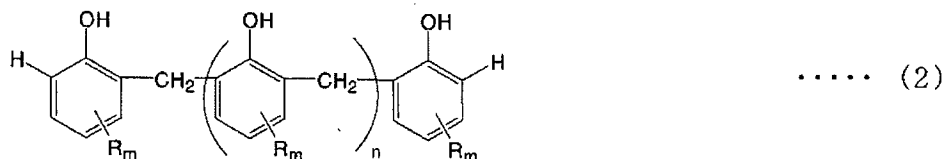
1. (Currently Amended) A photosensitive composition comprising:  
from 30 to 90 percent by weight of an epoxy compound (a) having two or more epoxy groups in a molecule;  
from 0.1 to 40 percent by weight of a polynuclear phenol compound (b) comprising three to five phenolic aromatic rings, wherein either of the ~~ortho~~ positions of ortho to each hydroxyl group is not substituted with any of a methylol group, or an alkyl group or cycloalkyl group having four or more carbon atoms and each of two or more of the phenolic aromatic rings has at least one unsubstituted position ortho to the hydroxyl group;  
from 0.1 to 10 percent by weight of an energy beam-sensitive cationic polymerization initiator (c); and  
from 1 to 60 percent by weight of a hydroxyl group-containing compound (d) having one or more hydroxyl groups and one or more of at least one of a vinyl ether group and an oxetanyl group having cationic polymerizability in a molecule.
2. (Canceled)
3. (Previously Presented) The photosensitive composition according to claim 1, wherein the epoxy groups of the epoxy compound (a) are alicyclic epoxy groups.

4. (Currently Amended) The photosensitive composition according to claim 1, wherein the polynuclear phenol compound (b) comprises a plurality of polynuclear phenol compounds (e) represented by formula (1):



wherein R denotes a C<sub>1</sub>-C<sub>5</sub> alkyl group, a C<sub>5</sub>-C<sub>10</sub> cycloalkyl group, a C<sub>1</sub>-C<sub>5</sub> alkoxy group, a halogen atom, a hydroxyl group, an aryl group or an aralkyl group; ~~all of the plurality of R in the formula each~~ may be the same or different; m is an integer from 0 to 3; and n is an integer from 1 to 3; and

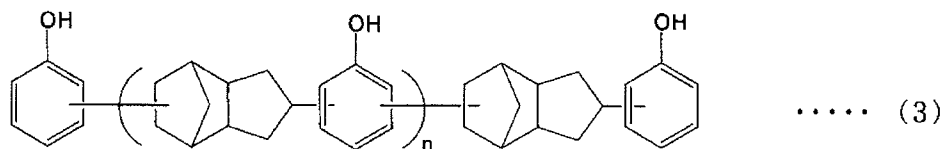
further contains a plurality of polynuclear phenol compounds (f) represented by formula (2):



wherein R denotes a C<sub>1</sub>-C<sub>5</sub> alkyl group, a C<sub>5</sub>-C<sub>10</sub> cycloalkyl group, a C<sub>1</sub>-C<sub>5</sub> alkoxy group, a halogen atom, a hydroxyl group, an aryl group or an aralkyl group; ~~all of the plurality of R in the formula each~~ may be the same or different; m is an integer from 0 to 3; and n is an integer of 0 or 4 or more,

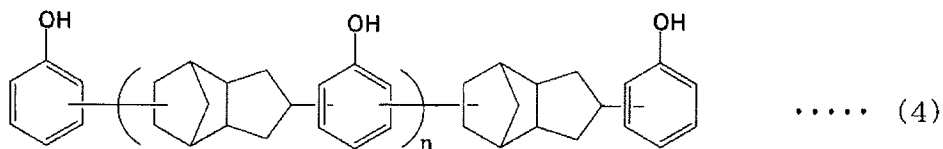
the percentage of the plurality of polynuclear phenol compounds (e) relative to a total of the plurality of polynuclear phenol compounds (e) and the plurality of polynuclear phenol compounds (f) being 40 percent by weight or more.

5. (Previously Presented) The photosensitive composition according to claim 1, wherein the polynuclear phenol compound (b) comprises a plurality of polynuclear phenol compounds (g) represented by formula (3):



wherein n is an integer from 1 to 3; and

further contains a plurality of polynuclear phenol compounds (h) represented by formula (4):



wherein n is an integer of 0 or 4 or more,

the percentage of the plurality of polynuclear phenol compounds (g) relative to the total of the plurality of polynuclear phenol compounds (g) and the plurality of polynuclear phenol compounds (h) being 40 percent by weight or more.

6. (Currently Amended) A cured product obtained by irradiating the photosensitive composition according to claim 1 with an active energy beam.

7. (Previously Presented) A photosensitive adhesive comprising the photosensitive composition according to claim 1.

8. (Previously Presented) A photosensitive coating material comprising the photosensitive composition according to claim 1.
9. (Previously Presented) A photosensitive ink jet ink comprising the photosensitive composition according to claim 1 and a coloring agent.
10. (Currently Amended) A cured product obtained by irradiating the photosensitive material according to claim 7 with an ~~active~~ energy beam.
11. (Currently Amended) A flat panel display ~~produced by using~~ including the photosensitive adhesive according to claim 7 as a sealer.
12. (Original) The flat panel display according to claim 11, wherein the flat panel display is an organic electroluminescent display.
13. (Previously Presented) The photosensitive coating material according to claim 8, further comprising an alkoxysilane.
14. (Previously Presented) The photosensitive coating material according to 13, wherein the alkoxysilane is tetraethoxysilane.
15. (Previously Presented) The cured product according to claim 6 further comprising heating the photosensitive composition to obtain the cured product.
16. (Previously Presented) The cured product according to claim 10 further comprising heating the photosensitive material to obtain to cured product.
17. (Currently Amended) A cured product obtained by irradiating the photosensitive composition according to claim 3 with an ~~active~~ energy beam.
18. (Previously Presented) A photosensitive adhesive comprising the photosensitive composition according to claim 3.

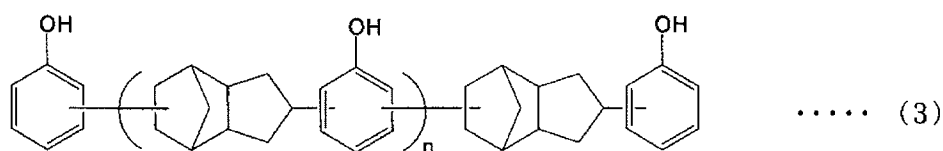
19. (Previously Presented) A photosensitive composition comprising:

from 30 to 90 percent by weight of an epoxy compound (a) having two or more epoxy groups in a molecule;

from 0.1 to 40 percent by weight of a polynuclear phenol compound (b) comprising three to five phenolic aromatic rings, wherein either of the ortho positions of each hydroxyl group is not substituted with any of a methylol group, or an alkyl group or cycloalkyl group having four or more carbon atoms and each of two or more of the phenolic aromatic rings has at least one unsubstituted position ortho to the hydroxyl group; and

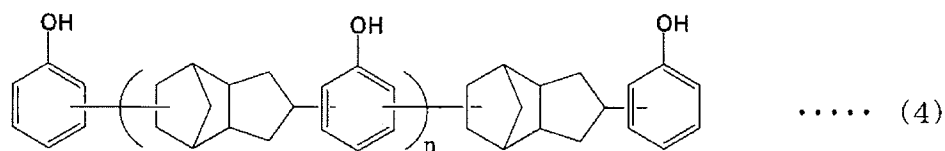
from 0.1 to 10 percent by weight of an energy beam-sensitive cationic polymerization initiator (c), and

wherein the polynuclear phenol compound (b) comprises a plurality of polynuclear phenol compounds (g) represented by formula (3):



wherein n is an integer from 1 to 3; and

further contains a plurality of polynuclear phenol compounds (h) represented by formula (4):



wherein n is an integer of 0 or 4 or more,

the percentage of the plurality of polynuclear phenol compounds (g) relative to the total of the plurality of polynuclear phenol compounds (g) and the plurality of polynuclear phenol compounds (h) being 40 percent by weight or more.

20. (Previously Presented) A photosensitive ink jet ink comprising a photosensitive composition and a coloring agent, the photosensitive composition comprising:

from 30 to 90 percent by weight of an epoxy compound (a) having two or more epoxy groups in a molecule;

from 0.1 to 40 percent by weight of a polynuclear phenol compound (b) comprising three to five phenolic aromatic rings, wherein either of the ortho positions of each hydroxyl group is not substituted with any of a methylol group, or an alkyl group or cycloalkyl group having four or more carbon atoms and each of two or more of the phenolic aromatic rings has at least one unsubstituted position ortho to the hydroxyl group; and

from 0.1 to 10 percent by weight of an energy beam-sensitive cationic polymerization initiator (c).



## **REMARKS**

Upon entry of the present amendment, claims 1, 4, 6, 10, 11 and 17 will be amended, whereby claims 1 and 3-20 will remain pending.

Reconsideration of the rejection of record and allowance of the application are respectfully requested.

### **Response To Allowable Subject Matter**

Applicants express appreciation for withdrawal of the objection to the drawings and the prior art rejections, with the indication that the claims are allowable upon withdrawal of the 35 U.S.C. 112, second paragraph, rejection.

For the reasons set forth herein, the rejection under 35 U.S.C. 112, second paragraph, should be withdrawn, and each of the pending claims should be indicated to be allowable.

### **Response to Rejection under 35 U.S.C. 112, Second Paragraph**

In response to the rejection of claims 1 and 3-20 under 35 U.S.C. 112, second paragraph, Applicants respectfully submit the following.

(a) Claims 1, 19 and 20 are rejected on the basis that the claims are not clear with respect to the language “wherein either of the ortho positions of each hydroxyl group...” In response, the claims have been amended to more explicitly recite ---wherein either of the positions ortho to each hydroxyl group---.

(b) Regarding claims 1, 4, 5 and 19, it is asserted that the term “plurality” renders the claims indefinite. The Examiner points to paragraph [0051] of the published application wherein one or more language is used.

In response, Applicants initially note that it appears that claim 1 may have been inadvertently included with this rejection, because “plurality” does not appear in the claim.

Applicants further point out that paragraph [0051] of the published application references polynuclear phenol compound (b) and discloses the following:

[0051] As the polynuclear phenol compounds (b) used in the present invention, one of the above-described various polynuclear phenol compounds can be used singly or in combination of two or more thereof.

Applicants further point out that regarding polynuclear phenol compounds (e), (f), (g) and (h) plural language is used in the specification relating to these compounds. See, for example, Applicants’ specification beginning at page 13, line 4.

Accordingly, the claims recited a plurality, and this language is clear and definite, whereby this ground of rejection should be withdrawn.

(c) The rejection of claim 4 questions the language relating to each R group.

In response, claim 4 has been amended to even more explicitly recite that R may be the same or different.

(d) In claims 6 and 17, the Examiner suggests changing “active beam” to “active energy beam”. In response, Applicants have made the amendment to “energy beam” as used in the specification, such as at page 23, lines 4 and 22.

(e) Regarding claim 11, "produced by using" has been changed to ---including---.

Accordingly, the rejections of record should be withdrawn.

Therefore, for at least the reasons set forth above, the 35 U.S.C. 112, second paragraph, rejection should be withdrawn.

### **Information Disclosure Statement**

Applicants express appreciation for the Examiner's confirmation of consideration of Applicants' Second Supplemental Information Disclosure Statement by including an initialed copy of the Form PTO-1449 with the Office Action.

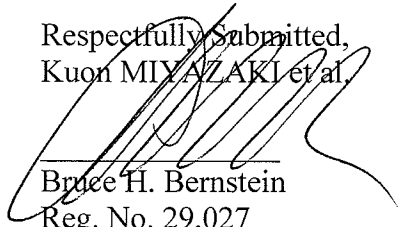
### **CONCLUSION**

In view of the foregoing, the Examiner is respectfully requested to reconsider and withdraw the objection and rejection of record, and allow each of the pending claims.

Applicants therefore respectfully request that an early indication of allowance of the application be indicated by the mailing of the Notices of Allowance and Allowability.

Should the Examiner have any questions regarding this application, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully Submitted,  
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